

# Resort Village of North Grove

## Transportation Impact Assessment

Final Report



CIMA+ File Number: SA0095A  
November 18, 2021

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Final Report

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## 1. Introduction

CIMA+ was retained by the Resort Village of North Grove (Village) to conduct a Transportation Impact Assessment (TIA) of a potential connection of Daniel Drive to the Buffalo Vista and Northshore Resort developments. Daniel Drive is the main access road into the Village from Highway 2. The Buffalo Vista and Northshore Resort developments are southeast of the Village along the shores of Buffalo Pound Lake, as shown in shown in **Figure 1**.

The proposed developments are under the planning authority of the Rural Municipality of Dufferin No. 190 (RM of Dufferin). The Village has previously raised concerns related to the impacts that development generated traffic would have on existing operation and safety on Daniel Drive, including to pedestrian, cyclist and other alternative modes of travel. The TIA completed by CIMA+ is intended to provide information to the Village in discussions with the RM of Dufferin and the respective developers, regarding the feasibility of a potential connection to Daniel Drive.



Figure 1: Site Context

## 1.1 Scope

The scope of the TIA was confirmed during a meeting with the Village on November 2, 2021. Meeting minutes as well as related scope correspondence are included under **Appendix A**. The steps undertaken to complete the TIA included:

- + **Conduct a field investigation to determine existing conditions along Daniel Drive** – observations of sight distances, pavement conditions, property access, roadside features and terrain. General information regarding the current roadway use was also gathered from Village staff during the site visit.
- + **Estimate background daily traffic volumes for Daniel Drive for the peak season** – representing a scenario where traffic from Buffalo Vista and North Resort are not accessing Daniel Drive.
- + **Estimate peak season daily traffic volumes generated by the proposed developments** – reflecting development characteristics including the type of facilities and seasonal operational trends.
- + **Determine the combined daily traffic volumes on Daniel Drive** – a combined scenario where Buffalo Vista and Northshore Resort are both connected to Daniel Drive and are using it as their primary access. A second scenario was also considered where only Buffalo Vista connects to Daniel Drive.
- + **Review operational and safety impacts on Daniel Drive from the proposed development traffic** – Included consideration of passenger vehicles, trucks, pedestrians, cyclists and recreational vehicles. Identified the appropriate road configuration for Daniel Drive to accommodate traffic generated by the proposed developments. Countermeasures to mitigate any increased safety risks and operational impacts were also identified.
- + **Provide high-level cost estimates of potential modifications** – Including consideration of the feasibility and cost-effectiveness of implementing the potential modifications to Daniel Drive.

## 1.2 Proposed Developments

The proposed developments include Buffalo Vista and Northshore Resort. Both developments are located southeast of the Village along the shores of Buffalo Pound Lake. Information regarding the developments were sourced from the respective websites, Buffalo Vista ([www.buffalovista.ca/](http://www.buffalovista.ca/)) and Northshore Resorts ([www.glampingresorts.com/northshore-resort](http://www.glampingresorts.com/northshore-resort)), as well as through discussions with Village staff. Development information used for the TIA is provided in **Appendix B**.

There are currently no Road Use Agreements between the Village and the proposed developments allowing them access to Daniel Drive. Despite the lack of such agreements, Village administration and residents report regularly witnessing traffic from the two developments, including heavy trucks, accessing Daniel Drive. It was also anecdotally noted that some trucks traveling to/from developments do not comply with the requirement of obtaining a weight permit from the Village for access. The Village currently lacks the resources to effectively enforce vehicle usage along Daniel Drive.

Village administration indicated that the overwhelming majority of residents (96%) oppose the connection from Daniel Drive to the proposed developments.

### 1.2.1 Buffalo Vista

Buffalo Vista is a proposed residential development with 12 lots planned during the initial sales and construction phase, with potential to expand to 30 lots once fully built-out. The lots may be developed into recreational homes with a similar level of amenities as homes within the Village. Potable water and sewage services would be the responsibility of the property owner and likely require servicing via trucks on a regular basis. Power, natural gas, telephone, internet & TV services would be available for connection to individual residences.

The initial development phasing was approved by the RM of Dufferin. It was expected that Buffalo Vista, similar to previous residential developments in the area, would be annexed into the Village. However, the potential connection from Daniel Drive into Buffalo Vista and Northshore Resort further south had received strong opposition from Village residents. This triggered the need for additional review and consultation between the RM of Dufferin and Village.

An unpaved access road from Buffalo Vista has been constructed connecting to the end of Daniel Drive. This is shown in **Figure 2**. Village administration has indicated a gate was supposed to be installed and maintained at the end of this access road towards the boundary of Northshore Resort. This would be to prevent access by unauthorized traffic from Northshore Resort. However, the gate has not been maintained in practice and traffic from Northshore Resort has been observed entering and exiting from Buffalo Vista onto Daniel Drive.



Figure 2: Access Road into Buffalo Vista – Looking South on Daniel Drive

## 1.2.2 Northshore Resort

Northshore Resort is a resort facility operated by Glamping Resorts Limited. It is also informally referred to as the Glamping Resort by visitors and Village residents. The resort currently consists of 8 glamping accommodations with plans to expand to 24. These accommodations can be described as short-term resort residences with amenities between that of a campsite and a resort cabin. In addition to the glamping accommodations, plans to expand the resort were previously identified to include 200 seasonal campsites as well as 64 residential dwelling units. A variety of supporting recreational and commercial facilities are also planned for the resort, including marinas, biking and hiking trails, etc. Some of the recreational and commercial facilities may be open to the general public, who would be visiting as part of day-trips and not necessarily staying overnight at the resort.

Currently, the primary access route into Northshore Resort is through Grid 739 and a 4km north-south grid road extending from the resort. The primary access route into Northshore Resort is illustrated in **Figure 3**.



Figure 3: Primary Access Route into Northshore Resort



The Village has raised concerns to both the RM of Dufferin and the developer regarding the large number of campsites and accommodations planned in Northshore Resort. Despite not being fully built, traffic to Northshore Resort has already impacted operations along Daniel Drive as resort visitors are erroneously directed to Daniel Drive when relying on Google Maps for directions. This has resulted in many instances of visitors reaching the end of Daniel Drive and having to turn around to find the actual access route into Northshore Resort.

It should be noted that Northshore Resort is in the preliminary stages of planning and that the final plans may change from what is described in this report. Given the large footprint of Northshore Resort, it would be reasonable to assume that full built-out development would include a relatively large number of accommodations and facilities such as those identified on previous plans. Plans submitted in 2018 to the RM of Dufferin indicated that more than 200 accommodation units would be provided in Northshore Resort. Advertising previously shown on the website of Northshore Resort also indicated a similar number of accommodations, including a mix of campsites, glamping sites and residential dwelling units.

### **1.3 Field Investigation**

A field investigation of Daniel Drive was conducted on November 3, 2021. During the visit, CIMA+ personnel collected photo and video footage of the road and made general observations regarding sight distances, pavement conditions, property access, roadside features and terrain. Staff from the Village were also present during the visit to offer feedback on general operational and safety of the roadway from the perspective of the community. The aim of the field investigation was to gain an understanding of existing conditions along Daniel Drive, and to assist the subsequent assessment of traffic and safety impacts from the proposed development.

In addition to observations along Daniel Drive, CIMA+ personnel also documented existing conditions along Grid 739, which is currently being used as the primary access route into Northshore Resort.

## 2. Existing Conditions

Information relating to the Village and Daniel Drive are summarized in the following sections. Historical information was obtained through discussions with Village staff and review of publicly available information on the Village's website ([www.resortvillageofnorthgrove.com](http://www.resortvillageofnorthgrove.com)). Existing characteristics of Daniel Drive were determined through the field investigation.

### 2.1 Resort Village of North Grove

The Resort Village of North Grove is located approximately 40 km north of Moose Jaw along the shores of Buffalo Pound Lake. The Village was incorporated on Jan 1, 1989 and has since then become an increasingly popular place for recreational living either on a seasonal or year-round basis. Approximately 200 residences are located within the Village.

Community amenities within the Village include a park with a fenced playground, beach area, and a basketball court with adjacent space planned for future construction of a pickleball court. A community boat launch provides space for 12 private boat lifts/docks. Many residences also have private docks and amenity space on the shoreline. Camping is currently not permitted within the Village.

The village provides year-round road maintenance and garbage disposal to the benefit of its residents. There are no shops or commercial facilities within the Village. Potable water and sewage disposal for individual residences are the responsibility of the property owner. Residents and contracted third-parties regularly haul water in and sewage out of the Village.

### 2.2 Daniel Drive

Daniel Drive is the main access road into the Village from Highway 2. The road is approximately 6.6 km long and was developed out of a historic trail through the Village. The posted speed limit on Daniel Drive is 40 km/h except for a relatively short segment immediately south of Highway 2 where the speed limit is 60 km/h. Daniel Drive is also considered the most critical piece of infrastructure in the Village. Approximately 65% of the Village's operating budget is spent on annual maintenance for Daniel Drive.

#### 2.2.1 Road Function

The primary function of Daniel Drive is to provide direct vehicular access to adjacent properties. Village residents rely on the road for access into the broader highway and grid road network outside the Village. As such, it could be functionally classified as a Rural Local Road under current engineering standards<sup>1</sup>. Typical traffic volumes on Rural Local roads are expected to be less than 1,000 vehicles per day. While Daniel Drive nominally meets the functional requirements for a Rural Local Road, it was never planned or constructed to any formal technical design standards.

The predominant users of Daniel Drive would be Village residents, who would be familiar with roadway conditions and have a high degree of confidence using the road. Village administration also indicated that Daniel Drive currently meets the needs of residents and that they feel safe travelling on the road.

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<sup>1</sup> Transportation Association of Canada (June 2017). *Geometric Design Guide for Canadian Roads. Table 2.6.4*

Daniel Drive is an 8-tonne limit truck route. Heavy trucks with Weight Permits are allowed access on Daniel Drive for garbage pick-up, water haul, sewage disposal and other uses. Village Council has waived the requirement to obtain Weight Permits for residents for water and sewage hauls as these are considered essential services. The accommodation of occasional heavy trucks on Daniel Drive is consistent with a Rural Local Road classification.

Additionally, Daniel Drive is used by pedestrian, cyclists and motorists operating recreational vehicles (ATVs, golf carts, etc.).

### 2.2.2 Alignment

Daniel Drive has significant horizontal curves and vertical curves at various points, likely due to the fact that it was developed out of a historic trail through the Village. The road curvature contributes to limited sight distances that may be deficient for vehicles travelling at the posted speed of 40km/h. Limited sight distances can also affect pedestrian and cyclist safety on Daniel Drive. Curves can be found near steep drop-offs to the shoreline. An example of horizontal curves and vertical curves on Daniel Drive is shown in **Figure 4**.



*Figure 4: Horizontal and Vertical Curves on Daniel Drive*

At several locations on Daniel Drive, there are moderate to steep grades which similarly contribute to limited sight distances. An additional consideration for roadway grades would be their impact on vehicle headlight usage. For roadways lacking illumination such as Daniel Drive, grades should be designed so that vehicle headlights illuminate a sufficiently long distance for the road ahead. Grades on Daniel, may not necessarily meet the desired headlight illumination standards. This can result in situations where drivers may not have sufficient time to react to hazards during periods of low visibility (e.g. nighttime, fog, etc.).

The terrain surrounding Daniel Drive varies from flat plains to steep hillsides. Many residences are built on hillsides or shorelines, both of which would be at risk to soil erosion.

### 2.2.3 Pavement

In recent years, Daniel Drive has been graded, gravelled and seal-coated on a regular basis for dust abatement and road stabilization purposes. This has created a thin pavement structure with relatively low load-bearing capacity. Various segments of the road show wear, minor rutting, and cracking. An example of the thin pavement structure and cracking is shown in **Figure 5**.



*Figure 5: Pavement Conditions on Daniel Drive*

Drainage on Daniel Drive is generally managed by sheet flow across the roadway cross-section, where water drains to one side and follows natural topography to the lake and/or seeps into the surrounding soil. In typical roadway drainage, the road is crowned in the center and water drains on both sides and flows along ditches and to designated outlets.

### 2.2.4 Cross-Section

The cross-section of Daniel Drive varies widely across its entire length. For the initial segment of Daniel Drive south of Highway 2, which is approximately two (2) kilometers long, pavement widths of around 9.0m were observed as shown in **Figure 6**. There are no accompanying shoulders, ditches are provided along one or both sides. The cross-section narrows further south along Daniel Drive. At several locations, pavement widths ranging from 4.0 – 6.3m were observed. Shoulders and ditches are generally not provided along these segments as shown in **Figure 7**



*Figure 6: Wider Cross-Section on Daniel Drive*



*Figure 7: Narrower Cross-Section on Daniel Drive*

Various driveways, garages and homes are built with minimal setback from Daniel Drive. Limited sight distances can be a concern for vehicles and pedestrians exiting from these driveways.

### **2.2.5 Roadside Features**

Roadside features alongside Daniel Drive include signage, utility poles and wood-post barriers. The existing traffic signage is in generally acceptable condition. Additional regulatory and warning signs may be necessary to inform motorists of road regulations and hazards. In particular, some of the curves along Daniel Drive may require advisory speed signage suggesting motorists to travel at lower speeds through the bend. Utility poles are often located with minimal offsets from the road surface, creating a striking hazard for vehicles in a potential run-off-road event. Wood-post barriers have been erected at two curves near steep drop-offs to the shoreline, one of which can be seen in Figure 4. However, these are not roadside safety barriers that would protect errant vehicles from roadside hazards.

## 3. Daily Traffic Volumes

Traffic on Daniel Drive was estimated for the Resort Village of North Grove, as well as the Buffalo Vista and Northshore Resort developments. Traffic volume estimates were developed for a typical weekend day during the peak season. During weekends in the peak season, the Village and the proposed development would experience the most activity from residents and visitors.

The assessment of daily traffic volumes informs the subsequent assessment of traffic impacts, including impacts to the road function. Daily traffic volumes include vehicles travelling in both directions along Daniel Drive over the course of a single 24-hour day. The Institute of Transportation Engineers Trip Generation Manual (ITE Manual), 11<sup>th</sup> Edition was used to estimate some of the daily traffic volumes. The ITE Manual is a widely used engineering reference for conducting traffic impact assessments.

### 3.1 Background

Background traffic volumes represent the traffic contribution only from Village residents. In this scenario, traffic from Buffalo Vista and Northshore Resort are not accessing Daniel Drive. Background traffic volumes were estimated using a traffic count conducted by the RM of Dufferin on Daniel Drive over the Canada Day weekend from July 2 – 5, 2021. This represents a roughly three-day period excluding parts of the day on July 2 and July 5 where traffic was not counted. The count indicated that 2,594 vehicles travelled along Daniel Drive in either direction. This corresponds to an average daily traffic volume of 865 vehicles over the course of the weekend. Village staff had indicated that traffic volume on the Canada Day weekend would be representative of a typical long weekend in the summer.

The daily traffic volume of 865 vehicles was compared to traffic volumes for recreational homes as described in the ITE Manual. This is summarized under **Table 1**. The comparison revealed that ITE daily traffic volumes for recreational homes would be 710 vehicles. The difference between the two figures may be attributed to the remote nature of the Village, which lacks many amenities such as shops, water and sewage servicing found in recreational homes in larger municipalities. The lack of such amenities could require residents to make more frequent trips and may explain the higher daily traffic volumes observed through the traffic count. Due to this, the observed daily traffic volume of 865 vehicles was selected as the most appropriate value for subsequent analysis. Using observed traffic on a summer long weekend is also consistent with the function of Daniel Drive. As the village would experience the most activity during the summer peak season, Daniel Drive needs to accommodate the peak background traffic during this period.

The daily traffic volume of 865 vehicles on Daniel Drive is within the threshold of 1,000 vehicles per day for a Rural Local road. It should be noted that the background daily traffic volumes would decrease along the length of Daniel Drive. The segment of Daniel Drive immediately south of Highway 2 would experience the full daily traffic volume of 865 vehicles since all Village residents must access the highway through this point. Further south into the Village, daily traffic volumes would decrease as there are fewer residents accessing Daniel Drive and travelling north.

Table 1: Background Daily Traffic Volumes

Daily Traffic Volumes - Background		
Criteria	Observed RM of Dufferin Count (Jul 2- 5, 2021)	Estimated ITE LUC 260 Recreational Homes (Weekday*)
Residences	200	200
Daily Traffic Rate (veh/residence)		3.55
Total Traffic (veh)	2,594	
Daily Traffic (veh/day)	865	710
<b>Daily Traffic Used for Analysis</b>	<b>865</b>	

\* The weekday rate for ITE LUC 260 was used as it was found to be slightly higher than the Saturday and Sunday rate. The average daily traffic rate was used instead of the fitted equation rate, as there are only minor differences between the two.

### 3.2 Development Generated

Development generated traffic would be the potential traffic contribution from the Buffalo Vista and Northshore Resort development onto Daniel Drive. At full-buildout, Buffalo Vista is expected to include up to 30 single-family detached residences. For Northshore Resort, full-buildout is expected to include up to 200 campsites, 64 residential dwelling units and 24 short-term resort residences. Northshore Resort may also include recreational/commercial day-use facilities that are open to the general public.

Development generated traffic was estimated using the ITE Manual and daily traffic rates from the Village. A summary of the development generated traffic is provided in **Table 2**. Residences in Buffalo Vista as well as the 64 residential dwellings in Northshore Resort, are assumed to function similarly to recreational homes in the Village. Therefore, the daily traffic rate observed from background traffic from the Village was applied to estimated traffic from these dwellings. For the campsite and short-term resort residences, their associated traffic was estimated using rates for comparable land uses found in the ITE Manual. Traffic contribution from a small number of assumed recreational/commercial day-use facilities were also estimated using the ITE Manual. The day-use facilities would comprise of approximately 10% of the overall traffic to Northshore Resort, it is assumed that facilities in the resort would be mostly used by patrons staying overnight, purely day trip traffic would be minimal.

Where ITE rates were used, they were selected from the weekday period either due to the weekday rates being higher than the weekend or there being no weekend data available. Similarly, the average daily traffic rate was used instead of the fitted equation for most land uses, except for 411 Public Park where the fitted equation was found to be more appropriate. For the campsite and short-term residences, the ITE Manual uses occupied campsites/accommodations as the analysis unit. These were estimated as 90% of the overall campsite and accommodation units. Additionally, no daily traffic rates were provided in the ITE Manual for either of these two uses. Therefore, the PM peak hour rate was used to determine a reasonable daily traffic rate as shown. The ratio used to convert PM peak hour to daily traffic is 8.5%, which is consistent with the peak hour traffic flow on Resort Highways in Saskatchewan<sup>2</sup>.

<sup>2</sup> Saskatchewan Ministry of Highway & Infrastructure (2018). *Travel On Saskatchewan Highways, 2016*. Pg. 5-10.

The estimated total development generated daily traffic volumes from Buffalo Vista and Northshore Resort would be 1,576 vehicles per day. This would be nearly double the background traffic from the Village. The total development generated traffic would be significant enough to exceed the traffic threshold of 1,000 vehicles per day for a Rural Local road such as Daniel Drive. Of the 1,576 total vehicles per day, only 130 would be attributed to Buffalo Vista while the remaining 1,446 vehicles would be attributed to Northshore Resort.

Table 2: Development Generated Daily Traffic Volumes

Land Use	ITE Land Use	Unit	# of Units	Daily Traffic Rate	Daily Traffic
<b>Buffalo Vista</b>					
Residences	N/A	Residences	30	4.32	130
<b>Sub-Total</b>	-	-	-	-	<b>130</b>
<b>Northshore Resort</b>					
Campsites	416 Campground/RV Park	Occupied Campsites	180*	4.82**	868
Short-Term Residence	330 Resort Hotel	Occupied Rooms	22*	11.76**	161
Long-Term Residence	N/A	Residences	64	4.32	277
Marina	420 Marina	Berths	20	2.41	48
Other Recreational Facilities	411 Public Park	Acres	5	18.40	92
<b>Sub-Total</b>	-	-	-	-	<b>1,446</b>
<b>Total</b>					<b>1,576</b>

\* # of occupied units was calculated as 90% of the available total units.

\*\* Daily traffic rate was calculated using the PM peak hour rate from ITE divided by 8.5%.

### 3.3 Combined

The combined traffic volumes were determined as the sum of background and development generated traffic. This represents a scenario where Buffalo Vista and Northshore Resort are both connected to Daniel Drive and are using it as their primary access. In addition, background traffic from Village residents would continue to utilize Daniel Drive. Combined traffic volumes are summarized in **Table 3**.



The combined traffic volume is expected to reach approximately 2,440 vehicles per day on Daniel Drive. This exceeds the traffic threshold of 1,000 vehicles per day for a Rural Local Road. Even when accounting for the gradual decrease in background traffic along Daniel Drive, the combined traffic volumes further south past Buffalo Vista and into Northshore Resort would still amount to more than 1,000 vehicles per day. The distribution of combined daily traffic volumes is illustrated in **Figure 8**.

Table 3: Combined Daily Traffic Volumes

Component	Daily Traffic Volumes
Resort Village of North Grove	865
Buffalo Vista	130
Northshore Resort	1,446
<b>Total</b>	<b>2,441</b>



Figure 8: Combined Daily Traffic Volumes along Daniel Drive

## 4. Traffic Impacts

A potential connection from Buffalo Vista and Northshore Resort to Daniel Drive would result in a significant increase in traffic when compared to existing traffic volumes. Combined traffic volumes exceed the traffic volumes typically supported by the current functional classification of Daniel Drive. Various operational and safety risks can arise from the increased traffic volumes.

### 4.1 Road Function

The introduction of development generated traffic onto Daniel Drive would trigger a change in functional classification from a Rural Local to a Rural Collector. As a Rural Collector, Daniel Drive could continue to provide direct access to properties in the Village in addition to accommodating traffic from the proposed developments further south. A Rural Collector typically accommodates daily traffic volumes above 1,000 but less than 5,000. This is consistent with the combined daily traffic volume of roughly 2,440 vehicles.

The predominant users of Daniel Drive would now be visitors to Northshore Resort. Residents from the Village and Buffalo Vista would comprise a minority of users. Visitors to Northshore Resort may not be familiar with roadway conditions and have a low degree of confidence using on the road.

A Rural Collector would typically be expected to accommodate a wider mix of vehicle types including a larger proportion of trucks and recreational vehicles. Reflective of current roadway usage, Daniel Drive may also need to accommodate increased pedestrian, cyclist and recreational vehicles usage from the proposed developments. Compared to a Rural Local, Rural Collector roads may also have higher design speeds and wider shoulders to facilitate more expedient travel.

### 4.2 Operational and Safety Risks

Development generated traffic would constitute at least 65% of the combined traffic on Daniel Drive and without significant improvements to the roadway cross-section and alignment, would be expected to exacerbate and/or trigger operational and safety risks.

The following sections outline the risks associated with increased traffic volumes on Daniel Drive and identify potential mitigation measures.

#### 4.2.1 Pavement Deterioration

**Risk:** Increased traffic on Daniel Drive will result in increased pavement deterioration, including cracking, rutting and potholes. The existing pavement structure on Daniel Drive was not designed to accommodate frequent heavy vehicle use. Various segments of the road are already showing wear, minor rutting, and cracking. Feedback from Village staff indicated that there has been significant unauthorized use of the road from outside visitors, particularly trucks, which places disproportionate strains on the pavement.

Increased pavement deterioration may create safety hazards for motorists and other road users. Severe cases of pavement distress can contribute to collisions, either due to drivers swerving to avoid them or the impact of driving over them. Similar collision risks exist for cyclists and users of small recreational vehicles such as golf-carts.

### **Potential Mitigation Measures:**

- Increased road maintenance
- Improved pavement structure, designed to accommodate increase traffic loads

#### **4.2.2 Traffic Noise**

**Risk:** Additional traffic on Daniel Drive from the proposed developments may contribute to an increase in traffic noise. This could be perceived to negatively impact quality of life for residents in the Village and cause discomfort to other road users such as pedestrians and cyclists.

### **Potential Mitigation Measures:**

- Sound attenuation (Note: Noise barriers, including walls or berms, are a costly and intrusive measure typically only used on major collector and arterial roads, in urban areas, and to address for noise levels significantly higher than would be expected on Daniel Drive, even with increased traffic due to developments. The number of driveways along Daniel Drive requiring frequent gaps in any sound attenuation would significantly limit effectiveness. Sound attenuation measures can also be an impediment to active modes, limiting opportunities to access the roadway corridor.)
- Reduction in traffic volume/speed

#### **4.2.3 Traffic Incident Management**

**Risk:** It is foreseeable that an increase in traffic may result in increased traffic incidents on the road. These incidents would be unplanned events that impede the normal flow of traffic and increase the likelihood of secondary incidents. Certain incidents may render the road impassable, impacting access to/from the Village. The narrow cross-section and significant curvature on Daniel Drive creates pinch points along the road that would be vulnerable to complete blockage during a traffic incident.

Currently, there are no formally designated emergency access routes to North Grove for instances where travel on Daniel Drive is impeded. This, combined with the vulnerability of Daniel Drive to complete blockages during traffic incidents, has the potential to impact access to the Village in case of emergency, for example during evacuations for natural disasters.

### **Potential Mitigation Measures:**

- Cross-section, alignment, and roadside feature modifications to Daniel Drive to improve safety performance
- Provide a designated secondary emergency access route
- Reduction in traffic volumes to reduce incident probability and frequency

#### **4.2.4 Highway Intersection Safety**

**Risk:** A connection to the proposed developments would result in increased traffic using the current intersection between Daniel Drive and Highway 2. The increased traffic may be more than what the highway intersection was designed to accommodate. Currently, the only intersection treatment provided is a northbound right-turn lane on Highway 2. Without mitigation measures, increased traffic could result in increased traffic incidents at the intersection.

### **Potential Mitigation Measures:**

- Review intersection characteristics and provide necessary treatments such as additional turning lanes or stop-control enhancements
- Reduction in traffic volumes on Daniel Drive and accessing Highway 2

#### **4.2.5 Safety of Vulnerable Road Users**

**Risk:** With an increase in traffic, vulnerable road users including pedestrians, cyclists and those using assistive devices (walking cane, powered wheelchairs, etc.) would be exposed to greater risk of collisions with motor vehicles. The consequence of motor vehicle collisions with vulnerable road users are often severe and include injuries or death. It is also foreseeable that pedestrian and cyclist traffic on Daniel Drive would increase once a connection to the proposed developments is provided. Visitors to Buffalo Vista and Northshore Resort may choose active or alternative modes to travel to the Village and utilize its public facilities. They may also elect to use Daniel Drive as a recreational walking and cycling route.

### **Potential Mitigation Measures:**

- Cross-section modifications to Daniel Drive to improve the safety of vulnerable road users. Including full width travel lanes and defined, paved shoulders. (Note: road shoulders are not a proper replacement for dedicated walking and cycling facilities.)
- Dedicated pedestrian facilities alongside or on a parallel alignment to Daniel Drive

#### **4.2.6 Usage by Large Vehicles**

**Risk:** Servicing of the proposed developments will lead to increased use of Daniel Drive by large vehicles, including trucks and recreational vehicles. Due to their larger dimensions and heavier driving characteristics, they require greater turning radii and sight distances along the road alignment compared to a typical passenger car. Large vehicles also have larger blind spots that obscure visibility between them and adjacent road users.

The current road cross-section, alignment, pavement and roadside features were not designed to accommodate frequent usage by large vehicles. As such, the increased presence of these vehicles may increase collision risks on the road.

### **Potential Mitigation Measures:**

- Cross-section, alignment, pavement and roadside feature modifications to Daniel Drive to allow for proper accommodation of large vehicles.

#### **4.2.7 Property Access**

**Risk:** Access into driveways, garages and homes adjacent to Daniel Drive would be impacted by the increased traffic from Buffalo Vista and Northshore Resort. From an operational perspective, residents may face delays exiting from their driveways and garages due to a need to yield to increased amount of traffic on the road. Additionally, various driveways, garages and homes are built with minimal setback from the road and limited sight distance. Increased traffic may lead to an increase in road incidents.

### **Potential Mitigation Measures:**

- Establish a clear zone around either side of the road to improve sight distance
- Consolidate access at locations meeting site distance requirements
- Reduction in traffic volumes

## **4.3 Mitigation**

To accommodate the change in function and mitigate operational and safety risks associated with increased traffic from the proposed developments, various modifications to Daniel Drive would be needed. These include:

- A reconstructed **pavement structure** with surface, base, sub-base, and subgrade layers designed to accommodate increased traffic loading, particularly truck traffic which places disproportion strain on the pavement.
- Widened **cross-section** to 10.4m consisting of a 3.7m full-width travel lane and 1.5m paved shoulders in each direction. The paved shoulders would accommodate occasional pedestrian and cyclist use, although they would not serve the full function of dedicated sidewalks or pathways.
- Horizontal and vertical **alignment** modifications design to meet the desired design speed and provide sufficient sight distances.
- **Roadside features** including traffic signage, pavement markings and roadside barriers to further improve traffic operations and safety.

### **4.3.1 Feasibility**

Given the constraints along Daniel Drive due to adjacent terrain, Buffalo Pound Lake, and existing properties, the feasibility of constructing significant roadway modifications on Daniel Drive is limited.

Changes to road alignment and cross-section would be constrained by the steep hillsides and shorelines along Daniel Drive. Excavation on or near these features would require further study to address any geotechnical and environmental risks. These risks, if deemed severe enough, may preclude the implementation of road modifications altogether.

To accommodate the widened road cross-section and adjusted road alignment, additional right-of-way may be required. Land acquisition could face significant pushback from affected property owners and create associated legal challenges. Compensation for any successful land acquisition must also be factored into the overall project costs. The availability of sufficient right-of-way would therefore affect the feasibility of overall road modifications on Daniel Drive and may preclude the implementation of necessary road modifications.

Both overhead and underground utilities must be considered when designing and constructing modifications along Daniel Drive. Existing overhead utility lines may need to be relocated at a significant cost. Underground utilities including septic systems would also require mitigation. The cost of these mitigation measures must be factored into the overall project costs and may negatively impact feasibility of overall road modifications.

Significant traffic accommodation would be required during construction. These could include alternating travel direction closures or complete road closures that impede normal traffic flow on Daniel Drive. Complete reconstruction of Daniel Drive may span multiple years/seasons. The accumulated disruption over these periods would cause considerable discomfort to Village residents. Public disapproval of traffic accommodation measures would impact feasibility of road modifications.

Major road modifications require accompanying engineering support to develop appropriate plans and designs. Typical engineering costs range from 10 – 20% of the overall construction costs. However, the significant geotechnical and environmental risks around Daniel Drive may require more extensive engineering support. This may cause the engineering costs to exceed 20% of construction costs and affect the economic feasibility of the overall project.

### 4.3.2 Cost Estimate

The cost of implementing required mitigations to Daniel Drive would depend on the results of further study to identify geotechnical and environment risks. Additional mitigation measures may be needed to address geotechnical and environment conditions. Similarly, preliminary design for the modifications would be needed to both confirm feasibility and determine right-of-way requirements, utility impacts, and potential for construction staging.

Assuming that the above factors are adequately addressed and estimated as a separate cost, a conceptual-level construction cost estimate for developing Daniel Drive into a Rural Collector road was developed. This is summarized in **Table 4**. The scope of work included in the cost estimate assumes that Daniel Drive would be re-constructed to a typical collector with a design speed of 60 km/h, including changes to alignment, drainage, cross-section and roadside design to meet current engineering standards.

*Table 4: Conceptual Level Construction Cost Estimate*

Item	Cost
Earthworks and Drainage	\$3,016,200
Asphalt Surfacing Structure	\$3,003,000
Roadside Barriers and Safety Measures	\$250,000
Traffic Accommodation	\$150,000
<b>Sub-Total</b>	<b>\$6,419,200</b>
Engineering (15%)	\$962,880
Contingency (20%)	\$1,283,840
<b>Total (Rounded)</b>	<b>\$8,665,920</b>

The construction cost of developing Daniel Drive into a Rural Collector road is estimated to be approximately \$8.7 million. This construction cost estimate does not include right-of-way acquisition, geotechnical and environmental mitigation, or utility relocations. The actual project costs are anticipated to be significantly higher considering these factors. Ongoing maintenance costs, which will also increase with a paved Rural Collector roadway cross-section, should also be factored into costs associated with roadway modifications. As previously described, the feasibility of construction to a Rural Collector standard in this location is relatively low due to a number of factors including but not limited to geotechnical and environment risks, and land and utility impacts.

### 4.3.3 Alternatives

The necessary modifications identified for Daniel Drive are not warranted to accommodate existing Village traffic. Rather, they would serve primarily to mitigate the traffic impacts from Buffalo Vista and Northshore Resort to the benefit of their respective residents and visitors.

Given the questionable feasibility and significant costs that would be incurred if implementing required modifications was feasible, alternative ways to accommodate resort traffic should be considered.

A clear alternative for Northshore Resort, would be for traffic to continue to utilize Grid 739 as the primary access route. From an operational and safety perspective, this is preferable over utilizing Daniel Drive. The current alignment of Grid 739 is relatively straight with minimal grades, while the posted speed limit of 80km/h is double that of Daniel Drive. Travel time estimates suggest that regardless of their direction of travel, visitors would reach Northshore Resort faster using Grid 739 than they could on Daniel Drive.

Travel time comparisons to Northshore Resort between using Grid 739 and Daniel Drive are summarized in **Table 5**. Route length shown in the table are for segments that differed between the two routes for visitors coming from Saskatoon/Regina/Moose Jaw. Length common to both routes are not shown since they do not change the difference in travel times. Routes were measured to a common point inside the Northshore Resort to reflect the fact that visitors would need travel further inwards to reach their accommodation. Average speed on Daniel Drive was assumed to be 40km/h including any future connections to Northshore Resort. Average speeds for the route on Grid 739, turning onto the grid road north of the resort and inside internal access roads was assumed to be 60km/h.

*Table 5: Travel Time Estimates Between Daniel Drive and Grid 739*

Direction of Travel	Length (km)		Average Speed (km/h)		Travel Time (Minutes)	
	Daniel Drive	Grid 739	Daniel Drive	Grid 739	Daniel Drive	Grid 739
Saskatoon	10.5	9.8	40	60	15.8	9.8
Regina*	14.2	6.1	40	60	21.3	6.1
Moose Jaw	8.5	11.8	40	60	12.8	11.8

\* Travel from Regina assumes visitors would turn off at Bethune onto Grid 739. Alternatively, they may choose to travel north on Hwy 11 then onto Hwy 2, however travel times would still be longer on Daniel Drive.

In addition to faster travel times, Grid 739 offers a wider cross-section that can better accommodate large vehicles. A typical cross-section on Grid 739 is shown in **Figure 9**. Although Grid 739 is currently unpaved, it has shown signs of regular maintenance and there appears to be no major rutting. Shallow ditches are also provided along the road to facilitate surface drainage. As such, it may be a more suitable candidate for road modifications in order to accommodate development generated traffic.



*Figure 9: Typical Cross-Section on Grid 739*

For Buffalo Vista, it may be argued that a connection to Daniel Drive would be feasible on account of its relatively low development generated traffic of only 130 vehicles per day. However, the combined traffic volume with just the connection to Buffalo Vista would reach approximately 1,000 vehicles per day at the busiest segment just south of Highway 2. The threshold for transitioning from a Rural Local to Rural Collector road begins at 1,000 vehicles per day, which suggest that some modifications may be desirable to accommodate the change in road function. The north segment of Daniel Drive already has a wide paved cross-section, ditching and relatively shallow curves and grades. Therefore, the justifiable modifications may be limited to additional signage and localized pavement rehabilitation.

Segments of Daniel Drive further south have narrower cross-sections, steeper horizontal and vertical curves. Thus, more modifications on these segments may be justified to mitigate the operational and safety risks of accommodating traffic from Buffalo Vista. These may include localized pavement widening where the current cross-section is too narrow, as well as installing additional traffic signage and roadside barriers.

A connection to only Buffalo Vista, if provided, should terminate in a cul-de-sac at the southern boundary of the development. This would be to discourage unauthorized access to Northshore Resort using Daniel Drive.

Further, an increase in traffic from Buffalo Vista could lead to increased maintenance cost and should be considered during discussions with the RM of Dufferin and the respective developers.



## 5. Conclusion

Assessment of traffic volumes indicated that background traffic on Daniel Drive is around 865 vehicles per day in the peak season. Development generated traffic is estimated to result in approximately 1,580 additional vehicles per day accessing Daniel Drive. Of these, 130 vehicles per day would be attributed to Buffalo Vista and 1,450 vehicles per day would be attributed to Northshore Resort. Combined traffic volumes would be in the vicinity of 2,440 vehicles per day on Daniel Drive during the peak season.

The increased traffic will have impacts to operations and safety on Daniel Drive. Its function would change from a Rural Local road, where the primary purpose is to provide access to adjacent properties in the Village, to a Rural Collector road which additionally collects traffic from the proposed developments. As a Rural Collector, Daniel Drive would be expected to accommodate a wider mix of road users including more trucks, recreational vehicles, pedestrians and cyclists. Development generated traffic is estimated to comprise at least 65% of the combined traffic on Daniel Drive, and could impact:

- Pavement deterioration
- Traffic noise
- Traffic incident management
- Highway intersection safety
- Safety of vulnerable road users
- Usage by large vehicles
- Property access

To address these impacts, significant modifications would be needed to the pavement, cross-section, alignment and roadside features for Daniel Drive. Assuming feasibility of modifying the corridor is confirmed, road cross section improvements alone are expected to cost approximately \$8.7 million. This excludes further mitigation that may not be known at this stage to address geotechnical and environmental requirements, utility relocations, right-of-way acquisition and related additional engineering fees.

Given the questionable feasibility and significant costs that would be incurred if implementing required modifications, alternative ways to accommodate development generated traffic should be considered. A clear alternative for Northshore Resort, would be for traffic to continue to utilize Grid 739 as the primary access route. From an operational and safety perspective, this is preferable over utilizing Daniel Drive. The current alignment of Grid 739 is relatively straight with minimal grades, while the posted speed limit of 80km/h is double that of Daniel Drive. Travel time estimates suggest that regardless of their direction of travel, visitors would reach Northshore Resort faster using Grid 739 than they could on Daniel Drive.

A further alternative would be to provide a connection on Daniel Drive to only the Buffalo Vista development. Buffalo Vista would generate a relatively small amount of traffic and thus require fewer modifications to Daniel Drive. The required modifications for this scenario may include localized pavement widening and rehabilitation, additional traffic signage and roadside barriers.

# A

## Appendix A Scope Correspondence



---

**From:** Rene Rosvold  
**Sent:** Friday, November 5, 2021 2:06 PM  
**To:** RVNorthGrove@SaskTel.net  
**Cc:** Jeffrey Halliday; Tom Li; Justen McArthur  
**Subject:** RE: North Grove information  
**Attachments:** Nov 2, 2021 - North Grove TIA Meeting Minutes.pdf

Hi Tracy,

Below is an updated work plan and schedule for the Transportation Impact Assessment (TIA). The TIA will identify potential operational and safety impacts on Daniel Drive should a connection to the Buffalo Vista and Northshore Resort developments be implemented. The work plan and schedule has been refined to reflect discussions between CIMA+ and the Resort Village of North Grove (the Village) during a project meeting on November 2, 2021 (minutes attached).

### **Work Plan**

- Task 1 CIMA+ will review observations made during a visit to the Village on November 3, 2021, including sight distances, pavement conditions, property access, signage and terrain along Daniel Drive. The review will summarize existing conditions along Daniel Drive and will document general information gathered from Village staff during the site visit..
- Task 2 The background daily traffic volumes for Daniel Drive will be estimated for the peak season. This represents a scenario where traffic from Buffalo Vista and Northshore Resort are not accessing Daniel Drive. Daily traffic volumes will be determined using a review of traffic count data collected by the RM of Dufferin during the 2021 Canada Day long weekend, as well as through engineering literature.
- Task 3 Estimate peak season daily traffic volumes generated from the fully built-out Buffalo Vista and Northshore Resort developments. Development traffic volumes will reflect development characteristics including the type of facilities and seasonal operational trends. At full-buildout, Buffalo Vista is expected to include up to 30 single-family detached residences. For Northshore Resort, full-buildout is expected to include up to 200 campground spots, 64 long-term resort residences and 24 short-term resort residences. Northshore Resort may also include recreational/commercial day-use facilities that are open to the general public.
- Task 4 The combined daily traffic volume for Daniel Drive will be determined as the sum of background traffic from the Village and the traffic generated from the two developments. This represents a scenario where Buffalo Vista and Northshore Resort are both connected to Daniel Drive and are using it as their primary access. Combined traffic volumes will also be assessed for a scenario where only Buffalo Vista is connected to Daniel Drive.
- Task 5 Review impacts development generated traffic would have on existing operations and safety on Daniel Drive, including impacts to alternative transportation modes. Review typical road classifications to determine the most appropriate configuration for Daniel Drive in order to allow for accommodation of development generated traffic. Identify what countermeasures may be necessary to mitigate any increased safety risks and operational impacts. For all identified mitigation measures provide high-level cost estimates to inform future project planning by the Village.
- Task 6 A draft report summarizing the above tasks will be produced in PDF format and submitted to the Village for review. Upon receipt of one set of comments from the Village, the draft report will be updated into a final report.

### **Schedule**

To ensure prompt completion of the TIA, we have already begun the initial tasks and anticipate submission of the draft report by no later than November 12, 2021. Once comments are received from village, we will incorporate any necessary changes into a final report that would be submitted within three (3) business days to the Village.

The opportunity to work on this TIA is much appreciated. If you have any questions on the workplan outlined above, let me know.

Hope you have a great weekend!

René

**RENÉ ROSVOLD**, P.Eng  
Associate Partner | Project Manager - Transportation  
T 403-775-0100 ext. 7620 M 403-619-2839

---

**From:** RVNorthGrove@SaskTel.net <RVNorthGrove@SaskTel.net>  
**Sent:** Tuesday, November 2, 2021 2:08 PM  
**To:** Rene Rosvold <Rene.Rosvold@cima.ca>; Jeffrey Halliday <Jeffrey.Halliday@cima.ca>; Tom Li <Tom.Li@cima.ca>; Justen McArthur <Justen.McArthur@cima.ca>  
**Subject:** North Grove information

I have attached the document for the traffic count by the RM of Dufferin on the Canada Day weekend. These counts are from an average long weekend at the lake. It was stated that this count is for each car passing the counter. We can clarify any questions you may have in the morning. I had stated to Marina that this is a typical long weekend in the summer.

In the drop box link below is also the weights of vehicles on our village road this summer that acquired permits. As Darrell stated on the call this morning we do not have anyone on site to force every vehicle overweight to get a permit. Many sneak through and use the excuse that they didn't know.

The Village has no septic or water so all residents haul water in and sewage out. This is Council has waived the weight permit for as it is an essential service. (note all properties on the lake including the RM will require septic pumping and water hauling). In addition to this we also have garbage pick up by a large Loraas truck, which accessed our road for both us and Buffalo Vista.

I have included the proposed plans for the development of Buffalo Vista in the drop box as well as a few more things that might clarify some background information

Tracy Edwards, Administrator - Urban  
Resort Village of North Grove  
306-694-8300  
[Http://www.resortvillageofnorthgrove.com](http://www.resortvillageofnorthgrove.com)

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**From:** [RVNorthGrove@SaskTel.net](mailto:RVNorthGrove@SaskTel.net) <[RVNorthGrove@SaskTel.net](mailto:RVNorthGrove@SaskTel.net)>

**Sent:** Thursday, September 23, 2021 11:55 AM

**To:** [marina.melchiorre@cima.ca](mailto:marina.melchiorre@cima.ca)

**Subject:** September 23 2021- North Grove Mapping

Good morning Marina

It was nice to meet you today and I look forward to working with you on this project. I have included a drop box link for our maps. I think they are too large to email.

REDACTED FOR PRIVACY REASONS

The maps labeled north-grove-special-0.6m and north-grove-0.6m-jan0111 are overlay maps purchased through ISC. These are from 2009 so a lot has changes when it comes to the development of the lots, as well subdivisions that have changed since then . You will see in some palces the proxcmity of the road to the lots edges may lap over. This is something that the Village will be discussing at the council meetings in the near future. The map labeled North-grov-ns-36x50 is a sample map that ISC proposed to us however it is the same underlay photo from 2009. This map does show the change in the road placement from the exchange land located in the area of the cooperative land group as we pointed out as well as the subdivisions that have been approved since then. I will include a pic to outline where I am referring to the cooperative land group .

I will email you the road weight permits later today.

The contact for the RM will most likely be Reeve Russ Kirzinger his number is REDACTED

Please feel free to call me to clarify anything.

Tracy Edwards,Administrator - Urban

Resort Village of North Grove

306-694-8300

[Http://www.resortvillageofnorthgrove.com](http://www.resortvillageofnorthgrove.com)

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## Meeting Minutes

**Date:** November 2, 2021  
**Client:** Resort Village of North Grove  
**Project:** Resort Village of North Grove Transportation Impact Assessment (TIA)  
**Location:** Microsoft Teams Meeting  
**Attendees:** Resort Village of North Grove - Darrell Crabbe (DC), Tracy Edwards (TE)  
CIMA+ - René Rosvold (RR), Tom Li (TL), Jeffrey Halliday (JH), Justen McArthur (JM)  
**C.C To:** All Attendees

### 1. Introduction

North Grove:

- DC is one of two Councilors for the Village.
- TE is the Administrator for the Village.
- The Village lies just north of the shores of Buffalo Pound Lake with approximately 200 residences. Primary access is through Daniel Drive, which measures roughly 7km and branches off south of Highway 2.
- The RM of Dufferin approved a new development southeast of North Grove called Buffalo Vista (<https://www.buffalovista.ca/>). The initial assumption, as is the case with many previous developments, is that it would be annexed into the Village.
- There is also an additional development by a third-party further southeast of both North Grove and Buffalo Vista. This would be Northshore Resort (<https://www.glampingresorts.com/northshore-resort>)
- Both developments would like to connect into Daniel Drive to access Highway 2. Some traffic from these developments have already started to pass through North Grove despite not having a formal Road Use Agreement.

CIMA+:

- RR is a Senior Transportation Planner and Project Manager. RR mentioned CIMA+ understands there has been a delay to the TIA and appreciates this meeting with North Grove to get the project back on track.
- TL is a Transportation Planning and Operations Engineer.
- JH is the Director of Infrastructure Services and Office Manager for Regina.
- JM is the Saskatchewan Transportation Lead.

### 2. Project Issues

DC/TE:

- Daniel Drive is a relatively narrow, seal-coated road that initially grew out of a trail. There are concerns regarding blind corners, pinch points, and speed where the existing limit of 40 kph may be too high. There is also no shoulder except for the first 1.5 km of Daniel Drive, which further complicates safety for the many pedestrians, cyclists and small recreational vehicles (golf carts, etc.) that utilize the road.
- Daniel Drive is an 8-tonne truck route that require weight permits. Trucks from Buffalo Vista and Northshore Resorts don't always abide by the requirement to register. North Grove lacks the resources to effectively enforce truck restrictions.



- Daniel Drive is the most critical piece of infrastructure in North Grove. Approximately 65% of the Village's budget is spent on maintaining the road.
- The overwhelming majority (96%) of residents opposed the Buffalo Vista development.
- If the two developments are connected to Daniel Drive, traffic may increase by more than threefold. This has the potential to cause conflicts between road users that may result in serious injuries.
- TIA should identify the level of daily traffic on Daniel Drive, both with and without the developments. The TIA should identify if the existing cross-section on Daniel Drive would be adequate to handle the expected traffic, and if not, what upgrades are necessary. It is possible that a full reconstruction would be required to bring the road up to a standard that could accommodate all development traffic. This would be a serious cost implication and raise the question of who should be paying for it.

RR:

- Asked about secondary egress route from the Village for emergencies. DC responded that there is a trail about 3/4th of the way south along Daniel Drive that connects to an RM grid road to the east. This trail is wide and flat enough to accommodate the typical car without 4WD (sedan, minivan, etc.). The landowner is also receptive to allowing access, a legal instrument can be placed to formally designate the trail for secondary egress.
- Asked about seasonal operation of Northshore Resort. DC/TE responded that the resort allows for both seasonal passes and outright land purchases for year-round uses.
- Asked about the current access into both Buffalo Vista and Northshore Resort. DC responded that it would be from Highway 2 onto Grid Road 739 and then turning south. This is approximately 10km and a bit longer than using Daniel Drive. However, Google Maps and probably most other GPS software are suggesting that visitors should be using Daniel Drive. There are many instances especially in the summer where visitors with large RVs run into the dead-end on Daniel Drive and have to turn around.

TL:

- Asked about where visitors are coming from. DC responded that there are plenty of visitors from beyond Moose Jaw and Regina. Albertans make up the most significant portion of out-of-province visitors.

### 3. Project Tasks

JH:

- Will visit the Village and meet with TE and a councilor on Wednesday Nov 3, 2021 at 1PM to go over site issues. Communicate issues found in the field to the whole team.

RR:

- Manage the CIMA+ team and be the primary point of contact with the Village.

TL:

- Compile a scope of work and updated project schedule to send to DC/TE to confirm. This is expected before end of week.
- Responsible for completing the TIA analysis and identifying road upgrades.

JM:

- Provide corporate support and high-level design estimates for road upgrades.

DC:

- Confirm the scope of work and updated project schedule from CIMA+ once they are received.



- Provide any plans, traffic counts and other information that may be useful for this TIA. It is noted that CIMA+ was already provided with the existing lot plans, weight permits, and traffic counts by the RM.

## 4. Project Deliverables

### **CIMA+:**

- Provide a draft TIA report in electronic format for review by the Village. This is expected sometime next week.
- TIA report will identify potential operational and safety impacts on Daniel Drive due to traffic from the development.
- Provide high-level cost estimates of any road upgrades required to bring Daniel Drive up to a standard that could accommodate the development generated traffic.
- Upon receipt of comments from the Village, the draft report will be updated into a final report.

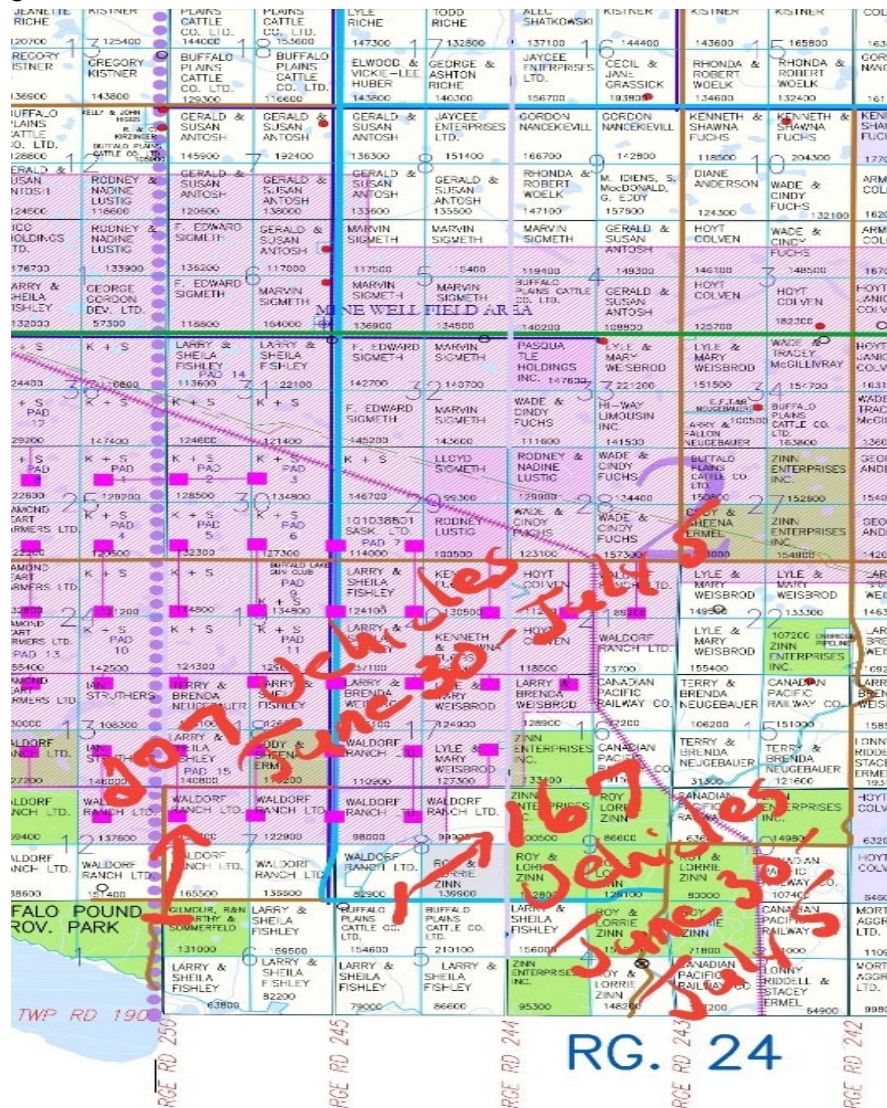


Traffic Count conducted by the RM of Dufferin 190 Canada Day weekend 2021. I believe they were set up Friday and taken down on Monday

- 1-So 2594 vehicles in North grove
- 2-1013 on 263 N of curve
- 4-984 to NSL- RM road at North Shore Lands
- 5-207 from park- June 30-July 5 RM Road
- 6-167 from Zinn hill- June 30-July 5 RM Road

These are road counters from July weekend.

S



# B

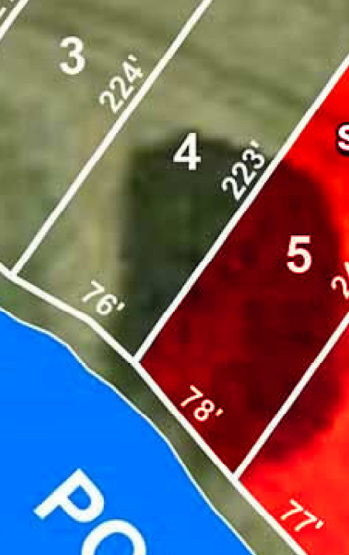
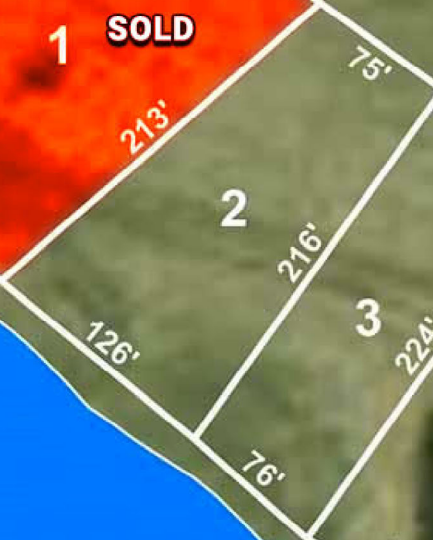
## Appendix B Development Information



Buffalo Vista

MUNICIPAL  
SERVE

BUFFALO



DANIEL DRIVE

POUND

LAKE

MUNICIPAL  
RESERVE

**NOTES**

- MEASUREMENTS ARE IN METRES AND DECIMALS THEREOF.
- LOT WIDTHS ARE APPROXIMATE AND MAY DIFFER FROM THE FINAL PLAN OF SURVEY BY AS MUCH AS 1.0 %.
- PORTION TO BE APPROVED IS OUTLINED WITH A BOLD DASHED LINE.
- CONTOURS ARE GEODETIC.
- AREA OF PROPOSED SUBDIVISION IN NW1/4 SEC 3 CONTAINS 2.62 ha (6.46 ac.)

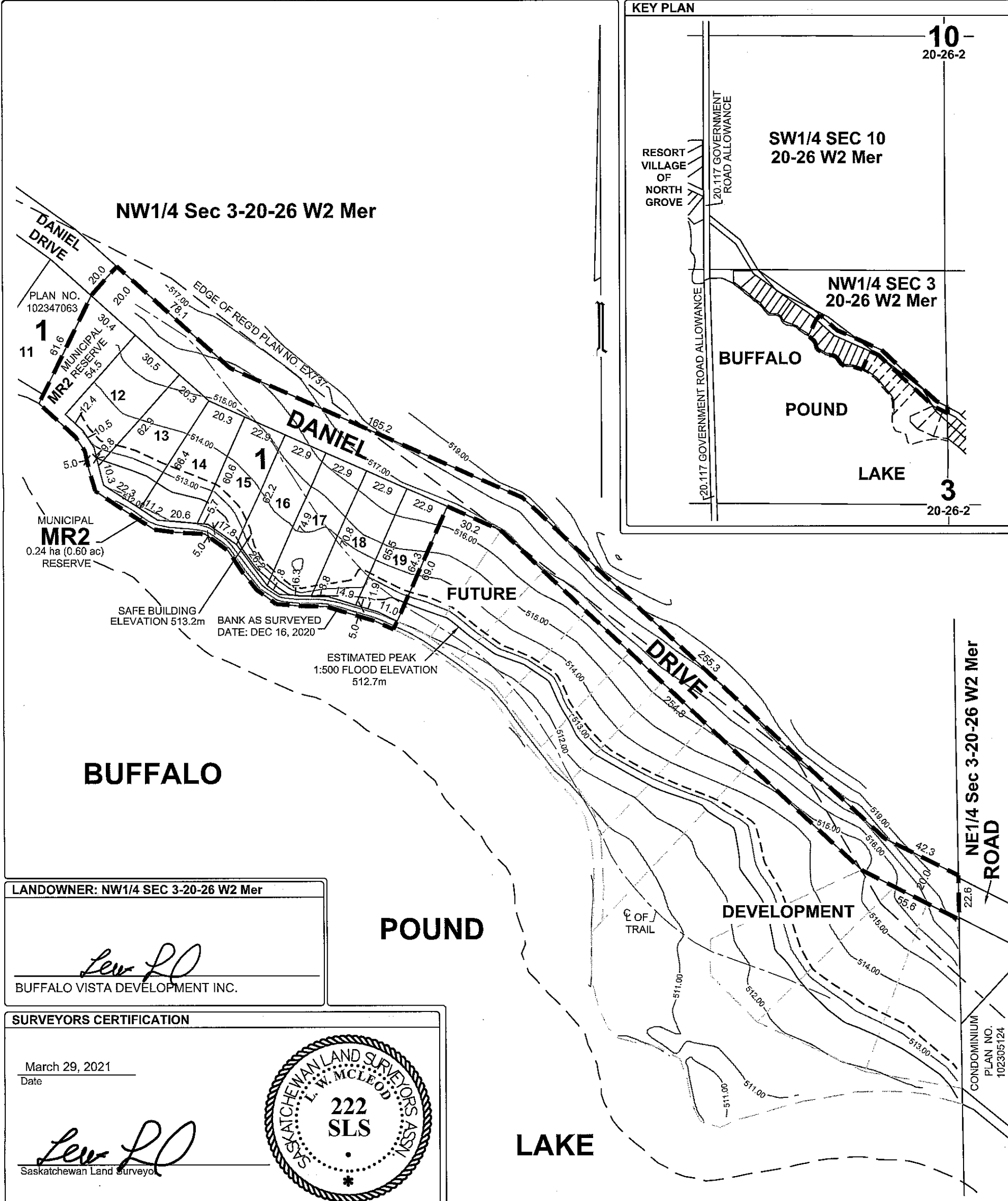
**PLAN SHOWING**

# BUFFALO VISTA - PHASE 2

## PLAN OF PROPOSED SUBDIVISION

OF PART OF  
**NW1/4 SEC 3, TWP 20, RGE 26, W2 Mer**  
 IN THE  
**R.M. OF DUFFERIN No. 190**  
**SASKATCHEWAN**  
**2021**  
 SCALE= 1:2000

**APPROVING AUTHORITY STAMP**



<b>MIDWEST SURVEYS INC.</b> 405 MAXWELL CRESCENT REGINA, SK S4N 5X9 TEL: 306-522-3601	No.	DATE	REVISION / ISSUED	JOB No.	PAGE 1 OF 1
	0	Mar 29, 2021	Plan Issued	RC-0308-17	0 REVISION
S:2017RC-0308-17\CADD\RC-0308-17-J5-PH2-PPS		SURVEYED BY: N/A		CALC'D BY: LM	DRAWN BY: DJS

**NOTES**

- MEASUREMENTS ARE IN METRES AND DECIMALS THEREOF.
- LOT WIDTHS ARE APPROXIMATE AND MAY DIFFER FROM THE FINAL PLAN OF SURVEY BY AS MUCH AS 1.0 %.
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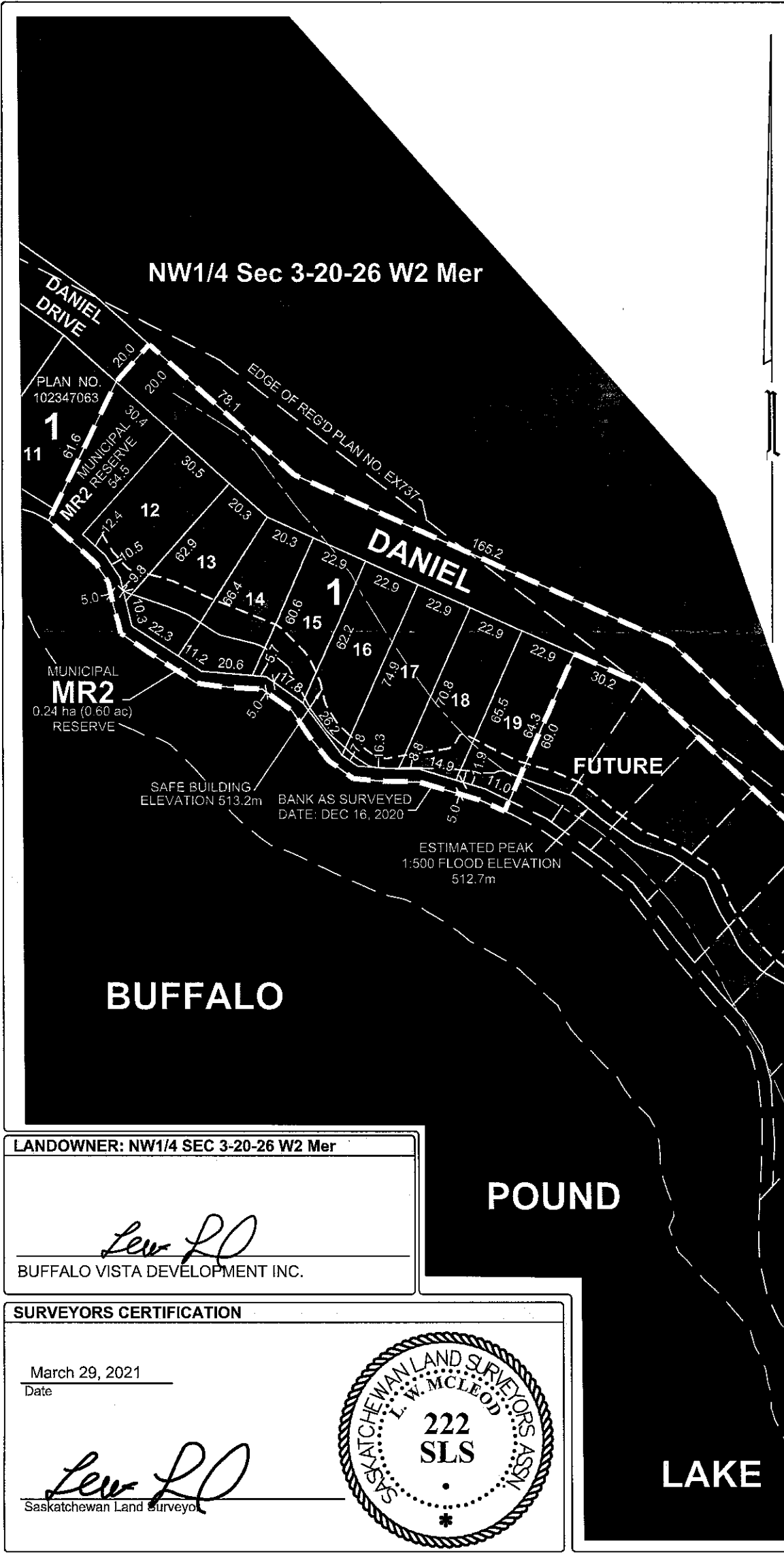
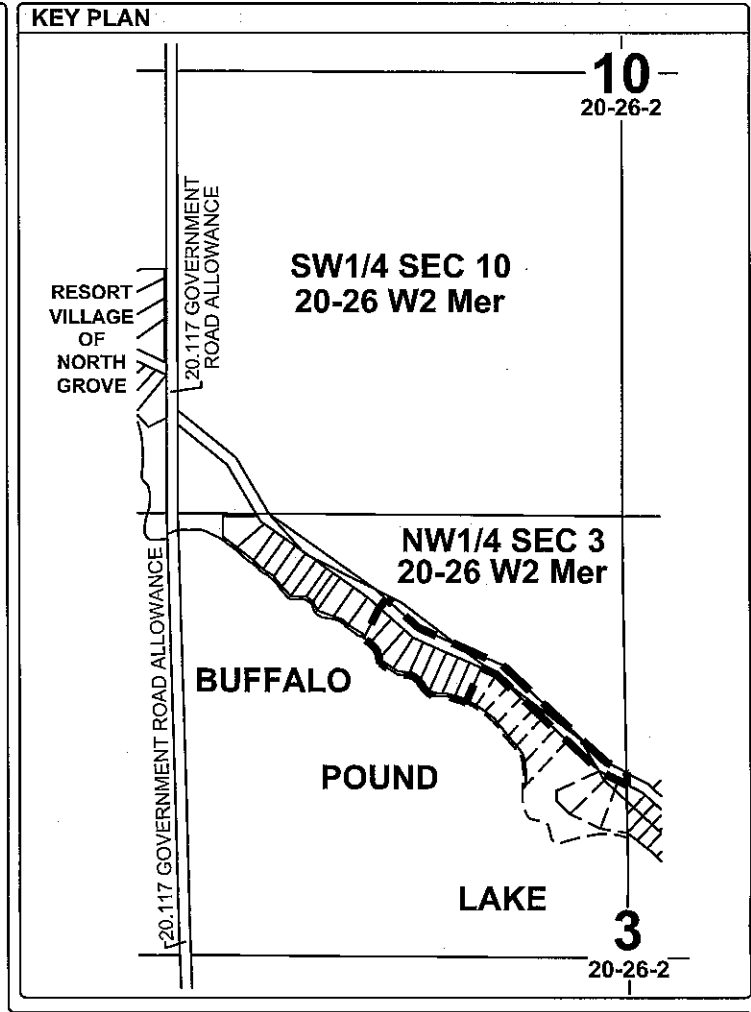
**PLAN SHOWING**

# BUFFALO VISTA - PHASE 2

## PLAN OF PROPOSED SUBDIVISION

OF PART OF  
**NW1/4 SEC 3, TWP 20, RGE 26, W2 Mer**  
 IN THE  
**R.M. OF DUFFERIN No. 190**  
**SASKATCHEWAN**  
**2021**  
 SCALE= 1:2000

**APPROVING AUTHORITY STAMP**



LANDOWNER: NW1/4 SEC 3-20-26 W2 Mer

*Lev RO*  
 BUFFALO VISTA DEVELOPMENT INC.

**SURVEYORS CERTIFICATION**

March 29, 2021  
 Date

*Lev RO*  
 Saskatchewan Land Surveyor

<b>MIDWEST SURVEYS INC.</b> 405 MAXWELL CRESCENT REGINA, SK S4N 5X9 TEL: 306-522-3601	No.	DATE	REVISION / ISSUED	JOB No.	PAGE 1 OF 1
	0	Mar 29, 2021	Plan Issued	RC-0308-17	0 REVISION
S:12017RC-0308-17\CADD\RC-0308-17-J5-PH2-PPS		SURVEYED BY: N/A		CALC'D BY: LM	DRAWN BY: DJS

Northshore Resort  
(Glamping Resort)

UNFORTUNATELY, OUR BUFFALO POUND GLAMPING ACCOMMODATIONS ARE SOLD OUT IN JULY & AUGUST.

[HOME](#)   [RESORTS](#)   [GIFT CERTIFICATES](#)   [BOOK NOW](#)

Welcome to Glamping Resorts Ltd, where we create a revitalizing, comfortable and stylish camping experiences. Our first location is pitched at Northshore Resort on the grounds of Buffalo Pound Lake, 20 minutes north of Moose Jaw Saskatchewan. Northshore Resort consists of 64 lakefront sites for sale, 200 sites Seasonal Campground and 24 Site Glamping Resort consisting of safari tents, geodesic domes, bell tents and trapper tents for those campers wishing to stay in luxury.

Join our family today for a camping experience like no other!



The map illustrates the layout of the Northshore Resort on Buffalo Pound Lake. It features a central area with numerous numbered sites (e.g., 1-100) arranged in curved paths. Amenities include a washroom, stone, horse ball, horseshoes, playground, stage/fire pit, and bike track. A legend in the top right corner defines these symbols. A compass rose with the AGS logo and the text 'MAPS NOT TO SCALE' is located in the upper right. The lake is labeled 'BUFFALO POUND LAKE' in two locations. A beach area is also indicated. The map includes various icons for tents, parking, domes, washrooms, stone, horse ball, horseshoes, playground, stage/fire pit, bike track, future 9 hole disc golf, and dangerous trees, dunes & camps.

**LEGEND**

- ▲ TENT SITE
- P PARKING
- ⬆️ DOME
- 🚻 WASH-ROOM
- WALKING PATH
- 🪨 STONE
- 🏀 HORSE BALL
- 🐎 HORSEHOES
- 🎡 PLAYGROUND
- 🔥 STAGE/FIRE PIT
- 🚲 BIKE TRACK
- 🏌️ FUTURE 9 HOLE DISC GOLF
- 🌳 DANGEROUS TREES, DUNES & CAMPS

**Glamping Resorts Ltd**  
Composites - Cottages - Yurts - Tents

*Northshore Resort  
on Buffalo Pound Lake*

Box 840, Unit 6 - 150 River Street.  
Lumsden, Saskatchewan, Canada.  
info@glampingresorts.com / 306-500-9278





### LEGEND

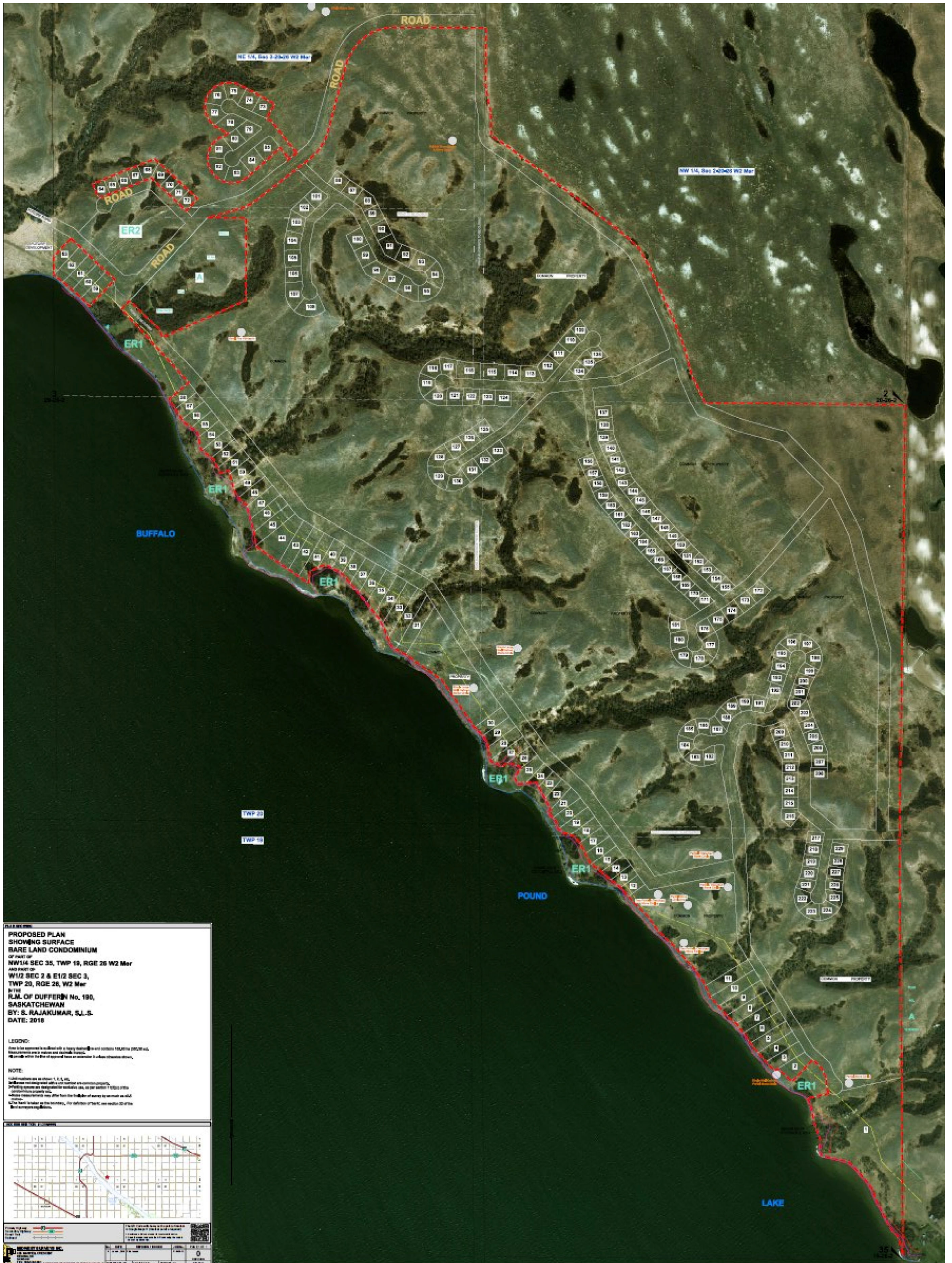
- TENT SITE
- PARKING
- DOME
- WASHROOM
- WALKING PATH
- STORE
- BOCCIE BALL
- HORSESHOES
- PLAYGROUND
- STAGE/FIRE PIT
- BIKE TRACK
- FUTURE 9 HOLE FRISBEE GOLF
- INDIGENOUS TEEPEE RINGS & CAIRNS



# Northshore Resort on Buffalo Pound Lake

Box 840, Unit 6 - 150 River Street.  
Lumsden, Saskatchewan, Canada.  
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BUFFALO POUND LAKE



**PROPOSED PLAN SHOWING SURFACE BARE LAND CONDOMINIUM**  
 OF PART OF  
 NW1/4 SEC 35, TWP 19, RGE 26 W2 Mer  
 AND PART OF  
 W1/2 SEC 2 & E1/2 SEC 3,  
 TWP 20, RGE 26, W2 Mer  
 BY THE  
 R.J.M. OF DUFFERIN No. 190,  
 SASKATCHEWAN  
 BY: S. RAJAKUMAR, S.J.L.S.  
 DATE: 2018

**LEGEND:**  
 Area to be acquired is shaded with a heavy stipple pattern in red and yellow.

**NOTE:**  
 1. All lot numbers are in accordance with the plan.



	Area to be acquired
	Area to be acquired
	Area to be acquired
	Area to be acquired
	Area to be acquired